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Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-12 (Canceled)

13. (Previously presented) A hybridization chamber comprising:

- a) a base plate wherein a base cavity for holding a first array component is formed in said base plate;
- b) a lid comprising at least one component port for immobilizing a second array component;
- c) a sealant between said base plate and said lid forming an airtight seal.

14. (Original) The chamber according to claim 13, wherein said second array component is a fiber optic bundle.

15. (Previously presented) The chamber according to claim 13 or 14, further comprising at least one alignment feature, wherein said at least one alignment feature facilitates alignment of said lid with said base plate.

16. (Previously presented) The chamber according to claim 13 or 14, further comprising at least one alignment feature, wherein said at least one alignment feature is a male and female fitting.

17. (Previously presented) The chamber according to claim 13 or 14, wherein said first array component is a microtiter plate.

18. (Previously presented) The chamber according to claim 13 or 14, wherein said chamber is connected to at least one fluid handling device.

19-28 (Canceled)

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29. (Previously presented) A hybridization chamber comprising:  
a) a base plate comprising a base cavity;  
b) a first array component comprising a plurality of assay locations, said first array component in said base cavity;  
c) a lid comprising a plurality of first component ports, wherein each of said component ports comprises a second array component, wherein said second array components align with corresponding assay locations of said first array component; and  
d) a sealant between said base plate and said lid forming an airtight seal.

30. (Previously presented) The chamber according to claim 29, wherein said first array component is a microtiter plate.

31. (Previously presented) The chamber according to claim 29, wherein said second array component is a fiber optic bundle.

32. (Previously presented) The chamber according to claim 29, 30 or 31, further comprising at least one alignment feature wherein, said at least one alignment feature facilitates alignment of said lid with said base plate.

33. (Previously presented) The chamber according to claim 32, wherein said at least one alignment feature is a male and female fitting.

34. (Previously presented) The chamber according to claim 29, 30 or 31, wherein said chamber is connected to at least one fluid handling device.

35 (Previously presented) The chamber according to claim 32, wherein said chamber is connected to at least one fluid handling device.

36. (Previously presented) The chamber according to claim 32, wherein said second array component comprises:

- a) a substrate comprising discrete sites; and

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b) a population of microspheres comprising first and second subpopulations distributed on said discrete sites, wherein each subpopulation comprises a distinct bioactive agent.

37. (Previously presented) A hybridization chamber comprising:

- a) a base plate comprising a base cavity;
- b) a first array component in said base cavity, wherein said first array component comprises a plurality of assay locations;
- c) a lid comprising a plurality of component ports, wherein said component ports comprise a second array component each second array component comprising a plurality of bioactive agents, wherein each of said second array components is aligned with one of said assay locations; and
- d) a sealant between said base plate and said lid forming an airtight seal.

38. (New) A hybridization chamber comprising:

- a) a base plate comprising a base cavity;
- b) a first array component in said base cavity, wherein said first array component comprises a plurality of assay locations;
- c) a lid comprising a plurality of second array components , wherein a plurality of said second array components comprise a plurality of bioactive agents, wherein a plurality of said second array components are aligned with a corresponding assay location; and
- d) a sealant between said base plate and said lid forming an airtight seal.

39. (New) A hybridization chamber comprising:

- a) a base plate comprising a first array component comprising a plurality of assay locations;
- b) a lid comprising a plurality of second array components , wherein a plurality of said second array components comprise a plurality of bioactive agents, wherein a plurality of said second array components are aligned with a corresponding assay location; and
- c) a sealant between said base plate and said lid forming an airtight seal.

40. (New) A hybridization chamber comprising:

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- a) a first array component comprising a plurality of assay locations, wherein said first array component is a multi-well plate;
- b) a lid comprising a plurality of second array components wherein a plurality of said second array components comprise an array comprising a plurality of bioactive agents directly coupled to said second array component, wherein a plurality of said second array components are aligned with a corresponding well of said multi-well plate; and
- c) at least one alignment feature configured to facilitate alignment of said lid with said first array component.

41. (New) The hybridization chamber according to claim 37, 38, 39 or 40, wherein a plurality of said second array components comprise a plurality of different bioactive agents.

42. (New) The hybridization chamber according to claim 37, 38, 39 or 40, wherein a plurality of said second array components comprise bioactive agents at a density of about 10,000,000 to 2,000,000,000 bioactive agents per cm<sup>2</sup>.

43. (New) The hybridization chamber according to claim 37, 38, 39 or 40, wherein a plurality of said second array components comprise bioactive agents at a density of about 100,000 to 10,000,000 bioactive agents per cm<sup>2</sup>.

44. (New) The hybridization chamber according to claim 37, 38, 39 or 40, wherein said first array component is a microtiter plate.

45. (New) The hybridization chamber according to claim 44, wherein said microtiter plate is selected from the group consisting of a 96-well microtiter plate, a 384 well microtiter plate and a 1536 well microtiter plate.

46. (New) The hybridization chamber according to claim 37, 38, 39 or 40, further comprising at least one alignment feature wherein said at least one alignment feature facilitates alignment of said lid with said base plate.

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47. (New) The hybridization chamber according to claim 46, wherein said at least one alignment feature is a male and female fitting.

48. (New) The hybridization chamber according to claim 37, 38, 39 or 40, wherein said chamber is connected to at least one fluid handling device.

49. (New) The hybridization chamber according to claim 37, 38, 39 or 40, wherein at least one of said second array components is a random array comprising:

a) a substrate comprising discrete sites; and

b) a population of microspheres comprising first and second subpopulations distributed on said discrete sites, wherein each subpopulation comprises a distinct bioactive agent.

50. (New) The hybridization chamber according to claim 37, 38, 39 or 40, wherein at least one of said second array components comprises a substrate comprising discrete sites and a plurality of bioactive agents attached to said substrate at said discrete sites.

51. (New) The hybridization chamber according to claim 37, 38, 39 or 40, wherein at least one of said bioactive agents is selected from the group consisting of peptides and nucleic acids.